WE CLAIM:

1. A rubber composition which, when vulcanized, is usable in a safety support intended to be mounted on a wheel rim inside a tire, the composition comprising:

(a) a diene elastomer,

(b) particles of an α-olefinic thermoplastic polymer having a melting point greater than or equal to 150°C, in an amount of 5 to 30 parts by weight per 100 parts diene elastomer (phr), wherein the mean size by weight of the particles is between 30 μm and 500 μm,

(c) greater than 60 phr of reinforcing filler, and

(d) from 3 to 8 phr of sulphur.

2. The rubber composition of claim 1, wherein the reinforcing filler comprises greater than 50% reinforcing white filler.

3. The rubber composition of claim 2, wherein the reinforcing white filler is silica in an amount ranging from 60 to 80 phr.

4. The rubber composition of claim 2, further comprising a polysulphurized alkoxysilane reinforcing white filler/elastomer bonding agent.

5. The rubber composition of claim 1, wherein the α-olefinic polymer is isotactic polypropylene.

6. The rubber composition of claim 1, wherein the diene elastomer is either natural rubber or synthetic polyisoprene.

7. The rubber composition of claim 1, wherein the diene elastomer is a blend of:

(a) natural rubber or synthetic polyisoprene in an amount greater than or equal to 60 phr, and

(b) a homopolymer obtained by polymerization of a conjugated diene monomer having from 4 to 12 carbon atoms or a copolymer obtained by copolymerization of one or more conjugated dienes with each other or with one or more vinyl aromatic compounds having from 8 to 20 carbon atoms, in an amount of less than or equal to 40 phr.

8. The rubber composition of claim 7, wherein the blend comprises approximately 60 phr of natural rubber and approximately 40 phr of polybutadiene.

9. The rubber composition of claim 1, wherein the composition exhibits an M10 elasticity modulus at 10% deformation which is greater than 10 MPa.

10. The rubber composition of claim 1, wherein the α-olefinic polymer is dispersed in the elastomer in the form of substantially spherical particles.

11. A process for preparing a vulcanized rubber composition comprising:

(a) a diene elastomer,

(b) particles of an α-olefinic thermoplastic polymer having a melting point greater than or equal to 150°C, in an amount of 5 to 30 parts by weight per 100 parts diene elastomer (phr), wherein the mean size by weight of the particles is between 50 μm and 500 μm,

(c) greater than 60 phr of reinforcing filler, and

(d) from 3 to 8 phr of sulphur,

the process comprising:

(i) in a first thermomechanical working stage, kneading the elastomer, reinforcing filler and α-olefinic polymer in the powder state, such that the dropping temperature is approximately 155°C,

(ii) in a second mechanical working stage, adding a sulphur vulcanization system to the mixture obtained on completion of stage (i), and

(iii) in a third vulcanization stage, curing of the mixture obtained on completion of stage (ii), wherein the operating temperatures of stages (i)-(iii)are always below the melting temperature of the α-olefinic polymer, such that the polymer is dispersed in the elastomer in the form of substantially spherical particles.

12. The process of Claim 11, wherein stage (i) is carried out at an initial temperature below 100°C, stage (ii) is carried out at a temperature below 100°C and stage (iii) is carried out at a temperature substantially equal to 150°C.

13. A safety support for mounting on a wheel rim inside a vehicle tire, the safety support being capable of supporting a tread of the tire in the event of a drop in inflation pressure, wherein the support comprises a vulcanized rubber composition comprising:

(a) a diene elastomer,

(b) particles of an α-olefinic thermoplastic polymer having a melting point greater than or equal to 150°C, in an amount of 5 to 30 parts by weight per 100 parts diene elastomer (phr), wherein the mean size by weight of the particles is between 50 μm and 500 μm,

(c) greater than 60 phr of reinforcing filler, and

(d) from 3 to 8 phr of sulphur.

14. The safety support of Claim 13, wherein the support comprises:

(a) a substantially cylindrical base, intended to conform to the wheel rim,

(b) a substantially cylindrical crown intended to contact the tire tread in the event of a drop in inflation pressure and to leave a clearance relative to the tread at nominal pressure, and

(c) an annular body connecting the base to the crown, the annular body comprising a circumferentially continuous supporting element with a circumferential median plane, wherein the supporting element comprises:

(i) a plurality of partitions extending axially on each side of the circumferential median plane and distributed around the circumference of the support, and

(ii) joining elements extending substantially circumferentially on one of the sides of the support, each joining element connecting the respective ends of two adjacent partitions which are arranged on the side of the support, the joining elements being arranged alternately in succession on each side of the partitions, wherein, between two adjacent partitions, the joining elements are mutually supported by a rib extending from the crown to the base of the support, such that the joining elements form a continuous joining wall in the form of a gusset extending along the side of the support.

15. The safety support of Claim 14, wherein the continuous wall comprises a plurality of cells, each of which is delimited by two adjacent ribs, the bottom of each cell exhibiting a substantially dihedral shape, the ridge of which is formed by one of the partitions and the faces of which are respectively formed by the alternate joining elements.

16. The safety support of Claim 13, wherein the support comprises:

(a) a substantially cylindrical base, intended to conform to the wheel rim,

(b) a substantially cylindrical crown intended to contact the tire tread in the event of a drop in inflation pressure and to leave a clearance relative to the tread at nominal pressure, and

(c) an annular body connecting the base to the crown, the body comprising a circumferentially continuous supporting element with a circumferential median plane, wherein the supporting element comprises:

(i) a plurality of partitions extending axially on each side of the circumferential median plane and distributed around the circumference of the support, and

(ii) joining elements extending substantially circumferentially, each joining element connecting the respective ends of two adjacent partitions which are arranged on the same side of the support, the joining elements being arranged alternately in succession on each side of the partitions, wherein the partitions are modified in their central portion relative to their lateral ends such as to increase buckling resistance of the annular body under radial load.

17. The safety support of Claim 16, wherein the ratio between the thickness of the partitions in their central portion and in their lateral ends is greater than 1.1.

18. The safety support according to Claim 16, wherein the partitions, from one lateral end to the other, exhibit at least one reversal in direction of the curvature thereof.

19. The safety support of Claim 18, wherein the partitions have a central portion extending substantially axially between two lateral portions, the lateral portions meeting the joining elements and forming an angle γ with the circumferential direction ranging from 20 to 40 degrees.

20. The safety support of Claim 16, wherein the partitions, from one lateral end to the other, exhibit at least three reversals in direction of the curvature thereof.

21. The safety support of Claim 18, wherein the partitions exhibit, in their central zone, two portions extending substantially axially and offset circumferentially relative to each other, together with a third joining portion.

22. The safety support of Claim 16, wherein on at least one side of the supporting element, each joining element is supported by at least one wall extending substantially axially towards the outside of the annular body.

23. The safety support of Claim 22, wherein each joining element forms a three-branched star structure with a supporting axial wall and the lateral ends of the two adjacent partitions.

24. The safety support of Claim 16, wherein the supporting element further comprises a web which is substantially cylindrical and coaxial with the support, the web being arranged radially at half height of the supporting element.

25. The safety support of Claim 16, wherein the supporting element contains no undercut portions that may obstruct axial demolding of the support.

26. A mounted assembly for a motor vehicle comprising a wheel rim, a tire mounted on the rim and a safety support according to any one of Claims 13 to 25 mounted on the rim inside the tire so as to be capable of supporting a tread of said tire in the event of a drop in inflation pressure, the rim comprising on each peripheral edge thereof a rim seat intended to receive a bead of the tire, the rim comprising between the two seats thereof, a bearing surface and a mounting groove connecting the bearing surface to an axially internal lip of one of the seats, or first seat.